

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-8 are allowed.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with James Love on 2/25/2009.

Mark Figs. 1 and 2 as "Prior Art".

Claim 1 (Currently Amended): A packet communication method comprising the steps of:

establishing a single radio layer 2 connection based on a radio layer 2 protocol, between a mobile station and a controller device, the single radio layer 2 connection associated with multiple GTP (GPRS Tunneling Protocol) based connections;

receiving, at the controller device, a plurality of data packets in which respective qualities of service are set;

inputting, at the controller device, the plurality of data packets to

queues corresponding to the respective qualities of service;

determining, at the controller device, a timing for taking out each data packet of the plurality of data packets from the queues corresponding to the respective qualities of service, based on the respective qualities of service; and

multiplexing, at the controller device, each data packet of the plurality of data packets taken from the queues at the determined timing into a radio layer 2 protocol data unit of a fixed length which is transmitted and received on the single radio layer 2 connection associated with multiple GTP based connections.

Claim 2 (Currently Amended): A controller device comprising:

a radio layer 2 connection establishing unit configured to establish, with a mobile station, a single radio layer 2 connection based on a radio layer 2 protocol, the single radio layer 2 connection associated with multiple GTP (GPRS Tunneling Protocol) based connections;

a reception unit configured to receive a plurality of data packets in which respective qualities of service are set;

an input unit configured to input the plurality of data packets to queues corresponding to the respective qualities of service;

a transmission timing determining unit configured to determine a timing for taking out each data packet of the plurality of data packets from the queues corresponding to the respective qualities of service, based on the respective qualities of service; and

a multiplexing unit configured to multiplex each data packet of the plurality of data packet packets taken from the queues at the determined timing into a radio layer 2 protocol data unit of a fixed length which is transmitted and received on the single radio layer 2 connection associated with multiple GTP based connections.

Claim 3 (Currently Amended): The controller device as set forth in claim 2 further comprising,

a transmitting unit configured to transmit, by a transport technology, the radio layer 2 protocol data unit into which each data packet of the plurality of data packets is multiplexed.

Claim 4 (Currently Amended): A mobile station comprising:

a radio layer 2 connection establishing unit configured to establish, with a controller device, a single radio layer 2 connection based on a radio layer 2 protocol, the single radio layer 2 connection associated with multiple GTP (GPRS Tunneling Protocol) based connections;

an input unit configured to input a plurality of data packets, in which respective qualities of service are set, to queues corresponding to the respective qualities of service;

a transmission timing determining unit configured to determine a timing for taking out each data packet of the plurality of data packets from the queues corresponding to the respective qualities of service, based on the respective qualities of service; and

a multiplexing unit configured to multiplex, each data packet of the plurality of data packets taken from the queues at the determined timing into a radio layer 2 protocol data unit of a fixed length which is transmitted and received on the single radio layer 2 connection associated with multiple GTP based connections.

Claim 5 (Currently Amended): The mobile station as set forth in claim 4 further comprising,

a transmitting unit configured to transmit, by a radio access technology, the radio layer 2 protocol data unit into which each data packet of the plurality of data packet packets is multiplexed.

Claim 6 (Currently Amended): A packet communication method comprising: establishing, at a mobile station, a single radio layer 2 connection based on a radio layer 2 protocol;

establishing a plurality of GTP (GPRS Tunneling Protocol) based tunneling connections for respective qualities of service, between a first controller device and a second controller device;

receiving, at the first controller device, a plurality of data packets in which the respective qualities of service are set and which are transmitted from the mobile station, through the single radio layer 2 connection or a single GTP based tunneling connection;

determining, at the first controller device, a GTP based tunneling connection

associated with a terminal address of the mobile station and a quality of service which are included in each data packet of the received plurality of data packets, among a plurality of GTP based tunneling connections for respective qualities of service; and relaying, at the first controller device, each data packet of the plurality of data packets to the second controller device through the determined GTP based tunneling connection.

Claim 7 (Currently Amended): The packet communication method as set forth in claim 6 further comprising the steps of:

transmitting, at the mobile station, a communication start request;
transmitting, at the first controller device, a GTP (GPRS Tunneling Protocol) based tunneling connection establishment request to the second controller device in accordance with the communication start request;
establishing, at the second controller device, a GTP based tunneling connection with the first controller device in accordance with the GTP based tunneling connection establishment request, and associating the established GTP based tunneling connection with the terminal address of the mobile station; and communicating the associated terminal address to the mobile station.

Claim 8 (Currently Amended): A controller device comprising:
a tunneling connection establishing unit configured to establish a plurality of GTP (GPRS Tunneling Protocol) based tunneling connections for respective qualities of

service with a certain controller device;

a data packet receiving unit configured to receive a plurality of data packets in which the respective qualities of service are set and which are transmitted from a mobile station, through a single radio layer 2 connection or a single GTP based tunneling connection; and

a relay unit configured to determine a GTP based tunneling connection associated with a terminal address of the mobile station and a quality of service which are included in each data packet of the received plurality of data packets, among a plurality of GTP based tunneling connections for respective qualities of service, and to relay each data packet of the plurality of data packets to the second controller device through the determined GTP based tunneling connection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WANDA Z. RUSSELL whose telephone number is (571)270-1796. The examiner can normally be reached on Monday-Thursday 9:00-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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